

Amendments to the Claim:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-27 (cancelled).

28 (currently amended). A method for identifying a catalyst of interest from a library ~~of~~ comprising at least two different potential catalysts, said method comprising:

- a) providing a library of units comprising potential catalysts, ~~comprising~~ at least two different potential catalysts presented in the library as components of different individual units, each unit having the structure potential catalyst-substrate, indicating that at least one potential catalyst molecule is attached to at least one substrate molecule, wherein said potential catalyst is attached to said at least one substrate in a manner that allows a potential catalytic reaction to occur between said potential catalyst and said at least one substrate;
- b) providing conditions suitable for said potential catalyst, if an actual catalyst, to catalyze the reaction of said at least one substrate to form one or more products, wherein at least one product of said catalytic reaction remains attached to said actual catalyst;
- c) providing at least one reagent or condition which converts said at least one attached product to at least one substrate so as to regenerate ~~said at~~ least one actual catalyst-substrate units;
- d) repeating said b) and c) at least once; and
- e) ~~selecting said~~ identifying at least one actual

catalyst, if present in said library, with the desired catalytic activity.

29 (currently amended). The method of claim 28, wherein said potential catalyst is biologically amplifiable.

30 (currently amended). The method of claim 28, wherein said unit is biologically amplifiable and said potential catalyst and said at least one substrate attached to said potential catalyst are attached on the surface of said biologically amplifiable unit.

31 (currently amended). The method of claim 28, wherein said potential catalyst is attached to said at least one substrate by a flexible linker.

32 (currently amended). The method of claim 28, wherein said potential catalyst is attached to said at least one substrate by a carrier system.

33 (currently amended). The method of claim 28, wherein said potential catalyst is attached to said at least one substrate by a flexible linker and a carrier system.

34 (withdrawn). The method of claim 32, wherein said carrier system is a bead particle.

35 (currently amended). The method of claim 28, wherein said ~~library of~~ potential catalysts ~~is a library of~~ are peptides or polypeptides.

36 (currently amended). The method of claim 35, wherein said ~~library of~~ peptides or polypeptides ~~is a library of~~ are enzymes.

37 (currently amended). The method of claim 36, wherein said ~~library of~~ peptides or polypeptides ~~is a library~~ ~~comprising recombined peptides or polypeptides~~ are recombinantly produced.

38 (currently amended). The method of claim 36, wherein said ~~library of~~ peptides or polypeptides ~~comprises~~ include

shuffled peptides or polypeptides.

39 (currently amended). The method of claim 36, wherein said ~~library of~~ peptides or polypeptides ~~comprises~~ include doped polypeptides.

40 (withdrawn; currently amended). The method of claim 28, wherein said library of potential catalysts is a library of nucleic acids.

41 (withdrawn). The method of claim 40, wherein said library of nucleic acids comprises recombined nucleic acids.

42 (withdrawn). The method of claim 40, wherein said library of nucleic acids comprises shuffled nucleic acids.

43 (withdrawn). The method of claim 40, wherein said library of nucleic acids comprises doped nucleic acids.

44 (withdrawn; currently amended). The method of claim 28, wherein said library of potential catalysts is a library of small organic molecules.

45 (withdrawn). The method of claim 44, wherein said library of small organic molecules was made by combinatorial chemistry.

46 (withdrawn; currently amended). The method of claim 28, wherein said library of potential catalysts is a library of small inorganic molecules.

47 (withdrawn). The method of claim 46, wherein said library of small inorganic molecules was made by combinatorial chemistry.

48 (currently amended). The method of claim 28, wherein the potential catalyst and the at least one substrate are different chemical substances.

49 (currently amended). The method of claim 28, wherein said ~~catalytic library of interest is a library of~~ potential catalysts are peptides or polypeptides, and in synthesizing said potential catalysts, some of the peptides or polypeptides obtained are shorter than intended, and said method entails

prior to said a), removing at least some of the shorter than intended peptides or polypeptides to obtain a library which is enriching enriched said library of peptides or polypeptides to obtain a library of for full-length peptides or polypeptides proteins.

50 (currently amended). The method of claim 29 28, ~~wherein said selecting is performed by which comprises~~ immobilizing said product molecule.

51 (currently amended). The method of claim 29 50, ~~wherein said selecting is performed by which comprises~~ immobilizing said product molecule ~~to on~~ an affinity column.

52 (currently amended). The method of claim 29 50, ~~wherein said selecting is performed by which comprises~~ immobilizing said product molecule ~~to on~~ a bead.

53 (currently amended). The method of claim 29 50, ~~wherein said selecting is performed by~~ immobilizing said product ~~to on~~ a microchip.

54 (withdrawn; currently amended). The method of claim 29 28, wherein said actual catalyst and the at least one substrate are bound to a matrix, and wherein said catalyst is released from said matrix when said at least one substrate is converted to said at least one product by said actual catalyst.

55 (currently amended). The method of claim 29, wherein said identifying selecting is ~~performed~~ performed by providing a column having at least one receptor that is able to bind said at least one product, and then identifying the actual catalyst bound through said product to said receptor.

56 (new). The method of claim 28 wherein the attachment of potential catalyst to substrate within an individual unit is covalent.

57 (new). The method of claim 28 where the substrate is regenerated in step (c) using a reaction pathway different

from the pathway which generated the product in step (b).

58 (new). The method of claim 28 where the substrate is regenerated in step (c) using a reaction catalyzed by a catalyst which is not a member of any of said units.

59 (new). The method of claim 28 where the substrate is regenerated in step (c) by reacting the product of step (b) with a reagent, such reaction resulting in production of said substrate, said reaction being energetically favored.

60 (new). The method of claim 28 wherein the regeneration step is energetically unfavorable, but is coupled to an energetically favorable reaction.

61 (new). The method of claim 60 in which the energetically favorable reaction is hydrolysis of ATP.

62 (new). The method of claim 28 in which the library comprises at least one unit comprising a known catalyst.